SEQUENCE LISTING

<110> NOVARTIS AG
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THE SCRIPPS RESEARCH INSTITUTE
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STORY, Gina M.

<120> ANKTM1, A COLD-ACTIVATED TRP-LIKE CHANNEL EXPRESS IN NOCICEPTIVE NEURONS

<130> SCRIP1600-1

<140> US 10/539,377
<141> 2003-12-18

<150> PCT/EP2003/014403
<151> 2003-12-17

<150> US 60/434,540
<151> 2002-12-18

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<170> PatentIn version 3.3

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<212> PRT
<213> Mus musculus

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Leu Asn Val Met Val Gln His Asn Arg Ile Glu Leu Leu Asn His Pro
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Val Cys Arg Glu Tyr Leu Leu Met Lys Trp Cys Ala Tyr Gly Phe Arg
20 25 30

Ala His Met Met Asn Leu Gly Ser Tyr Cys Leu Gly Leu Ile Pro Met
35 40 45

Thr Leu Leu Val Val Lys Ile Gln Pro Gly Met Ala Phe Asn Ser Thr
50 55 60

Gly Ile Ile Asn Gly Thr Ser Ser Thr His Glu Glu Arg Ile Asp Thr
65 70 75 80

Leu Asn Ser Phe Pro Ile Lys Ile Cys Met Ile Leu Val Phe Leu Ser
85 90 95

Ser Ile Phe Gly Tyr Cys Lys Glu Val Ile Gln Ile Phe Gln Gln Lys
100 105 110

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Arg Asn Tyr Phe Leu Asp Tyr Asn Asn Ala Leu Glu Trp Val Ile Tyr
        115                 120                 125

Thr Thr Ser Ile Ile Phe Val Leu Pro Leu Phe Leu Asn Ile Pro Ala
    130                 135                 140

Tyr Met Gln Trp Gln Cys Gly Ala Ile Ala Ile Phe Phe Tyr Trp Met
145                 150                 155                 160

Asn Phe Leu Leu Tyr Leu Gln Arg Phe Glu Asn Cys Gly Ile Phe Ile
                165                 170                 175

Val Met Leu Glu Val Ile Phe Lys Thr Leu Leu Arg Ser Thr Gly Val
            180                 185                 190

Phe Ile Phe Leu Leu Leu Ala Phe Gly Leu Ser Phe Tyr Val Leu Leu
        195                 200                 205

Asn Phe Gln Asp Ala Phe Ser Thr Pro Leu Leu Ser Leu Ile Gln Thr
    210                 215                 220

Phe Ser Met Met Leu Gly Asp Ile Asn Tyr Arg Asp Ala Phe Leu Glu
225                 230                 235                 240

Pro Leu Phe Arg Asn Glu Leu Ala Tyr Pro Val Leu Thr Phe Gly Gln
                245                 250                 255

Leu Ile Ala Phe Thr Met Phe Val Pro Ile Val Leu Met Asn Leu Leu
            260                 265                 270

Ile Gly Leu Ala Val Gly Asp Ile Ala Glu Val Gln Lys His Ala Ser
        275                 280                 285

Leu Lys Arg Ile Ala Met Gln Val Glu Leu His Thr Asn Leu Glu Lys
    290                 295                 300

Lys Leu Pro Leu Trp Tyr Leu Arg Lys Val Asp Gln Arg Ser Thr Ile
305                 310                 315                 320
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<210> 2
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<213> Homo sapiens

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Val Cys Lys Glu Tyr Leu Leu Met Lys Trp Leu Ala Tyr Gly Phe Arg
            20                  25                  30

Ala His Met Met Asn Leu Gly Ser Tyr Cys Leu Gly Leu Ile Pro Met
        35                  40                  45

Thr Ile Leu Val Val Asn Ile Lys Pro Gly Met Ala Phe Asn Ser Thr
    50                  55                  60

Gly Ile Ile Asn Glu Thr Ser Asp His Ser Glu Ile Leu Asp Thr Thr
65                  70                  75                  80

Asn Ser Tyr Leu Ile Lys Thr Cys Met Ile Leu Val Phe Leu Ser Ser
                85                  90                  95

Ile Phe Gly Tyr Cys Lys Glu Ala Gly Gln Ile Phe Gln Gln Lys Arg
            100                 105                 110

Asn Tyr Phe Met Asp Ile Ser Asn Val Leu Glu Trp Ile Ile Tyr Thr
        115                 120                 125

Thr Gly Ile Ile Phe Val Leu Pro Leu Phe Val Glu Ile Pro Ala His
    130                 135                 140

Leu Gln Trp Gln Cys Gly Ala Ile Ala Val Tyr Phe Tyr Trp Met Asn
145                 150                 155                 160

Phe Leu Leu Tyr Leu Gln Arg Phe Glu Asn Cys Gly Ile Phe Ile Val
                165                 170                 175

Met Leu Glu Val Ile Leu Lys Thr Leu Leu Arg Ser Thr Val Val Phe
            180                 185                 190

Ile Phe Leu Leu Leu Ala Phe Gly Leu Ser Phe Tyr Ile Leu Leu Asn
        195                 200                 205

Leu Gln Asp Pro Phe Ser Ser Pro Leu Leu Ser Ile Ile Gln Thr Phe
    210                 215                 220

Ser Met Met Leu Gly Asp Ile Asn Tyr Arg Glu Ser Phe Leu Glu Pro
225                 230                 235                 240

Tyr Leu Arg Asn Glu Leu Ala His Pro Val Leu Ser Phe Ala Gln Leu
                245                 250                 255
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```
Val Ser Phe Thr Ile Phe Val Pro Ile Val Leu Met Asn Leu Leu Ile
            260                 265                 270

Gly Leu Ala Val Gly Asp Ile Ala Glu Val Gln Lys His Ala Ser Leu
        275                 280                 285

Lys Arg Ile Ala Met Gln Val Glu Leu His Thr Ser Leu Glu Lys Lys
    290                 295                 300

Leu Pro Leu Trp Phe Leu Arg Lys Val Asp Gln Lys Ser Thr Ile
305                 310                 315
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<213> Drosophila melanogaster

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Leu Ser Gln Lys Tyr Leu Gln Met Lys Trp Asn Ser Tyr Gly Lys Tyr
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Phe His Leu Ala Asn Leu Leu Ile Tyr Ser Ile Phe Leu Val Phe Val
        35                  40                  45

Thr Ile Tyr Ser Ser Leu Met Met Asn Asn Ile Glu Leu Lys Ala Gly
    50                  55                  60

Asp Asn Lys Thr Met Ser Gln Tyr Cys Asn Met Gly Trp Glu Gln Leu
65                  70                  75                  80

Thr Met Asn Leu Ser Gln Asn Pro Ser Val Ala Ser Gln Ile Arg Leu
                85                  90                  95

Asp Ser Cys Glu Glu Arg Ile Asn Arg Thr Thr Ala Ile Leu Phe Cys
            100                 105                 110

Ala Val Val Ile Val Val Tyr Ile Leu Leu Asn Ser Met Arg Glu Leu
        115                 120                 125

Ile Gln Ile Tyr Gln Gln Lys Leu His Tyr Ile Leu Glu Thr Val Asn
    130                 135                 140
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Leu Ile Ser Trp Val Leu Tyr Ile Ser Ala Leu Val Met Val Thr Pro
145                 150                 155                 160

Ala Phe Gln Pro Asp Gly Gly Ile Asn Thr Ile His Tyr Ser Ala Ala
                165                 170                 175

Ser Ile Ala Val Phe Leu Ser Trp Phe Arg Leu Leu Leu Phe Leu Gln
            180                 185                 190

Arg Phe Asp Gln Val Gly Ile Tyr Val Val Met Phe Leu Glu Ile Leu
        195                 200                 205

Gln Thr Leu Ile Lys Val Leu Met Val Phe Ser Ile Leu Ile Ile Ala
    210                 215                 220

Phe Gly Leu Ala Phe Tyr Ile Leu Leu Ser Lys Ile Ile Asp Pro Gln
225                 230                 235                 240

Pro Asn His Leu Ser Phe Ser Asn Ile Pro Met Ser Leu Leu Arg Thr
                245                 250                 255

Phe Ser Met Met Leu Gly Glu Leu Asp Phe Val Gly Thr Tyr Val Asn
            260                 265                 270

Thr Tyr Tyr Arg Asp Gln Leu Lys Val Pro Met Thr Ser Phe Leu Ile
        275                 280                 285

Leu Ser Val Phe Met Ile Leu Met Pro Ile Leu Leu Met Asn Leu Leu
    290                 295                 300

Ile Gly Leu Ala Val Gly Asp Ile Glu Ser Val Arg Arg Asn Ala Gln
305                 310                 315                 320

Leu Lys Arg Leu Ala Met Gln Val Val Leu His Thr Glu Leu Glu Arg
                325                 330                 335

Lys Leu Pro His Val Trp Leu Gln Arg Val Asp Lys Met Glu Leu Ile
            340                 345                 350
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<213> Drosophila melanogaster

<400> 4

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1               5                   10                  15
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Val Val Gln Arg Tyr Leu Gln Glu Leu Trp His Gly Ser Leu Thr Trp
            20                  25                  30

Ala Ser Trp Lys Ile Leu Leu Leu Leu Val Ala Phe Ile Val Cys Pro
        35                  40                  45

Pro Val Trp Ile Gly Phe Thr Phe Pro Met Gly His Lys Phe Asn Lys
    50                  55                  60

Val Pro Ile Ile Lys Phe Met Ser Tyr Leu Thr Ser His Ile Tyr Leu
65                  70                  75                  80

Met Ile His Leu Ser Ile Val Gly Ile Thr Pro Ile Tyr Pro Val Leu
                85                  90                  95

Arg Leu Ser Leu Val Pro Tyr Trp Tyr Glu Val Gly Leu Leu Ile Trp
            100                 105                 110

Leu Ser Gly Leu Leu Leu Phe Glu Leu Thr Asn Pro Ser Asp Lys Ser
        115                 120                 125

Gly Leu Gly Ser Ile Lys Val Leu Val Leu Leu Leu Gly Met Ala Gly
    130                 135                 140

Val Gly Val His Val Ser Ala Phe Leu Phe Val Ser Lys Glu Tyr Trp
145                 150                 155                 160

Pro Thr Leu Val Tyr Cys Arg Asn Gln Cys Phe Ala Leu Ala Phe Leu
                165                 170                 175

Leu Ala Cys Val Gln Ile Leu Asp Phe Leu Ser Phe His His Leu Phe
            180                 185                 190

Gly Pro Trp Ala Ile Ile Ile Gly Asp Leu Leu Lys Asp Leu Ala Arg
        195                 200                 205

Phe Leu Ala Val Leu Ala Ile Phe Val Phe Gly Phe Ser Met His Ile
    210                 215                 220

Val Ala Leu Asn Gln Ser Phe Ala Asn Phe Ser Pro Glu Asp Leu Arg
225                 230                 235                 240

Ser Phe Glu Lys Lys Asn Arg Asn Arg Gly Tyr Phe Ser Asp Val Arg
                245                 250                 255
```

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Met His Pro Ile Asn Ser Phe Glu Leu Leu Phe Phe Ala Val Phe Gly
            260                 265                 270

Gln Thr Thr Thr Glu Gln Thr Gln Val Asp Lys Ile Lys Asn Val Ala
        275                 280                 285

Thr Pro Thr Gln Pro Tyr Trp Val Glu Tyr Leu Phe Lys Ile Val Phe
    290                 295                 300

Gly Ile Tyr Met Leu Val Ser Val Val Val Leu Ile Asn Leu Leu Ile
305                 310                 315                 320

Ala Met Met Ser Asp Thr Tyr Gln Arg Ile Gln Val Val Leu Leu Asn
                325                 330                 335

Ala Leu Leu Ser Asn Ser Thr Leu Phe Ile Asn Ser Tyr Phe Asn His
            340                 345                 350

Lys Tyr Ile Asn Phe Ile Leu His Cys Val Leu Ile Ile Leu Tyr Phe
        355                 360                 365
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<210> 5
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<212> PRT
<213> Caenorhabditis elegans

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Leu Asp Val Leu Ile Glu Asn Glu Gln Lys Glu Val Val Ser Tyr Ala
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Ser Val Gln Arg Tyr Leu Thr Glu Val Trp Thr Ala Arg Val Asp Trp
            20                  25                  30

Ser Phe Gly Lys Phe Val Ala Phe Ser Leu Phe Val Leu Ile Cys Pro
        35                  40                  45

Pro Ala Trp Phe Tyr Phe Ser Leu Pro Leu Asp Ser Arg Ile Gly Arg
    50                  55                  60

Ala Pro Ile Ile Lys Phe Val Cys His Ile Val Ser His Val Tyr Phe
65                  70                  75                  80

Thr Ile Leu Leu Thr Ile Val Val Leu Asn Ile Thr His Lys Met Tyr
                85                  90                  95

Glu Val Thr Ser Val Val Pro Asn Pro Val Glu Trp Leu Leu Leu Leu
```

```
            100                 105                 110

Trp Leu Ser Gly Asn Leu Val Ser Glu Leu Ser Thr Val Gly Gly Gly
        115                 120                 125

Ser Gly Leu Gly Ile Val Lys Val Leu Ile Leu Val Leu Ser Ala Met
    130                 135                 140

Ala Ile Ala Val His Val Leu Ala Phe Leu Leu Pro Ala Val Phe Leu
145                 150                 155                 160

Thr His Leu Asp Asn Asp Glu Lys Leu His Phe Ala Arg Thr Met Leu
                165                 170                 175

Tyr Leu Lys Asn Gln Leu Phe Ala Phe Ala Leu Leu Phe Ala Phe Val
            180                 185                 190

Glu Tyr Leu Asp Phe Leu Thr Val His His Leu Phe Gly Pro Trp Ala
        195                 200                 205

Ile Ile Ile Arg Asp Leu Met Tyr Asp Leu Ala Arg Phe Leu Val Ile
    210                 215                 220

Leu Met Leu Phe Val Ala Gly Phe Thr Leu His Val Thr Ser Ile Phe
225                 230                 235                 240

Gln Pro Ala Tyr Gln Pro Val Asp Glu Asp Ser Ala Glu Leu Met Arg
                245                 250                 255

Leu Ala Ser Pro Ser Gln Thr Leu Glu Met Leu Phe Phe Ser Leu Phe
            260                 265                 270

Gly Leu Val Glu Pro Asp Ser Met Pro Pro Leu His Leu Val Pro Asp
        275                 280                 285

Phe Ala Lys Ile Ile Leu Lys Leu Leu Phe Gly Ile Tyr Met Met Val
    290                 295                 300

Thr Leu Ile Val Leu Ile Asn Leu Leu Ile Ala Met Met Ser Asp Thr
305                 310                 315                 320

Tyr Gln Arg Ile Gln Ala Gln Ser Asp Lys Glu Trp Lys Phe Gly Arg
                325                 330                 335

Ala Ile Leu Ile Arg Gln Met Asn Lys Lys Ser Ala Thr Pro Ser Pro
            340                 345                 350
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Ile Asn Met Leu Thr Lys Leu Ile Ile Val Leu Arg Val
355 360 365

<210> 6
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<212> PRT
<213> Caenorhabditis elegans

<400> 6

Leu Lys Leu Met Ala Asp Ala Glu Lys Leu His Leu Leu Asn His Pro
1 5 10 15

Leu Ser Lys Ala Leu Leu Lys Tyr Lys Trp Asn Arg Leu Gly Arg Pro
20 25 30

Met Tyr Tyr Phe Ala Leu Phe Met Tyr Leu Val Phe Ile Val Ser Leu
35 40 45

Thr Gln Tyr Val Arg His Thr Lys Ala Pro Tyr Asn Val Trp Asn Glu
50 55 60

Glu Ser Tyr Tyr Asp Ser Glu Tyr Phe Asp Glu Asn Glu Thr Cys Pro
65 70 75 80

Gln Ile Asn Thr Thr Lys Pro Asp Val Val Trp Lys Ile Ile Ile Gln
85 90 95

Thr Leu Ala Val Cys Gln Ile Leu Val Glu Cys Phe Gln Leu Phe Gln
100 105 110

Arg Lys Phe Ala Tyr Leu Val Asn Trp Glu Asn Trp Ile Asp Cys Phe
115 120 125

Ile Tyr Ser Thr Ala Leu Ile Thr Val Tyr Asp Phe Ser Glu Cys Ser
130 135 140

Ala Thr Ser Gly Val Arg Gln Asn Trp Gln Trp Ile Leu Ala Ala Leu
145 150 155 160

Cys Ile Phe Phe Gly Trp Ile Asn Leu Leu Phe Met Ile Arg Lys Met
165 170 175

Pro Arg Phe Gly Ile Phe Val Val Met Phe Val Asp Ile Val Lys Thr
180 185 190

```
Phe Phe Arg Phe Phe Pro Val Phe Val Leu Phe Ile Ile Ala Phe Ser
        195                 200                 205

Ser Ser Phe Tyr Val Ile Leu Gln Asn Arg Pro Glu Phe Ser Thr Ile
    210                 215                 220

Phe Met Ser Pro Leu Lys Thr Thr Val Met Met Ile Gly Glu Phe Glu
225                 230                 235                 240

Phe Thr Gly Ile Phe His Gly Asp Glu Thr Thr His Ala Glu Lys Met
                245                 250                 255

Phe Gly Pro Ala His Thr Ala Val Ala Cys Ala Leu Phe Phe Phe Phe
            260                 265                 270

Cys Ile Ile Met Thr Ile Leu Leu Met Asn Leu Leu Val Gly Leu Ala
        275                 280                 285

Val Asp Asp Ile Lys Gly Val Gln Glu Lys Ala Glu Leu Lys Arg Leu
    290                 295                 300

Ala Met Gln Val Asp Leu Val Leu Gln Ile Glu Ala Ser Leu His Phe
305                 310                 315                 320

Phe Ile Gln Arg Thr Lys Lys Tyr Ala Thr Cys
                325                 330
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<210> 7
<211> 333
<212> PRT
<213> Drosophila melanogaster

<400> 7

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Leu Asn Thr Phe Val Asp Glu Gly Gln Lys Glu Ile Leu Glu His Pro
1               5                   10                  15

Leu Cys Ser Ser Phe Leu Tyr Ile Lys Trp Gly Lys Ile Arg Lys Tyr
            20                  25                  30

Tyr Ile Gly Arg Leu Ile Phe Cys Phe Ser Phe Val Leu Phe Leu Thr
        35                  40                  45

Leu Tyr Val Leu Thr Ala Leu Ala His Asn Cys Tyr Asn Gly Ser Lys
    50                  55                  60

Asn Asp Asn Thr Thr Ile Pro Ala Gln Glu Leu Cys Gln Lys Gln Ser
65                  70                  75                  80
```

```
Ile Leu Gly Asp Met Leu Arg Asn Asn Pro Phe Val Met Glu Met Gln
                85                  90                  95

Trp Trp Val Leu Val Ala Ile Thr Ile Val Glu Ile Phe Arg Lys Leu
            100                 105                 110

Tyr Gly Ile Thr Gly Tyr Ser Ser Phe Arg His Tyr Val Thr Gln Val
        115                 120                 125

Glu Asn Ile Met Glu Trp Phe Val Ile Thr Ser Val Phe Val Ile Ser
    130                 135                 140

Tyr Ile Tyr Thr Asn Lys Thr Tyr Thr Phe Gln Asn His Ile Gly Ala
145                 150                 155                 160

Phe Ala Val Leu Leu Gly Trp Thr Asn Leu Met Leu Met Ile Gly Gln
                165                 170                 175

Leu Pro Val Phe Asp Val Tyr Val Ala Met Tyr Thr Arg Val Gln Gly
            180                 185                 190

Glu Phe Ala Lys Leu Phe Met Ala Tyr Ser Cys Met Leu Ile Gly Phe
        195                 200                 205

Thr Ile Ser Phe Cys Val Ile Phe Pro Ser Ser Ser Ser Phe Ala Asn
    210                 215                 220

Pro Phe Met Gly Phe Ile Thr Val Leu Val Met Met Ile Gly Glu Gln
225                 230                 235                 240

Asp Leu Ser Leu Leu Ile Asn Asp Pro Glu Gly Lys Asp Pro Pro Phe
                245                 250                 255

Leu Leu Glu Val Ser Ala Gln Ile Thr Phe Val Leu Phe Leu Leu Phe
            260                 265                 270

Val Thr Ile Ile Leu Met Asn Leu Leu Val Gly Ile Ala Val His Asp
        275                 280                 285

Ile Gln Gly Leu Lys Lys Thr Ala Gly Leu Ser Lys Leu Val Arg Gln
    290                 295                 300

Thr Lys Leu Ile Ser Tyr Ile Glu Ser Ala Leu Phe Asn Gly Tyr Leu
305                 310                 315                 320
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Pro Thr Trp Leu Arg Asn Leu Leu His Tyr Thr Ala Leu
325 330

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<212> PRT
<213> Drosophila melanogaster

<400> 8

Leu Leu Ser Leu Ile Glu Val Gly Gln Lys Arg Ile Leu Met His Pro
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Leu Cys Glu Thr Phe Leu Phe Leu Lys Trp Arg Arg Ile Arg Lys Phe
20 25 30

Phe Leu Met Ser Leu Ala Tyr His Thr Leu Phe Val Ile Leu Phe Thr
35 40 45

Phe Tyr Val Ile Trp Val Tyr Val Arg Cys Cys Lys Lys Glu Glu Leu
50 55 60

Cys Val Ala Pro Gly Tyr Val Ser Thr Ile Gly Tyr Leu Val Ile Ile
65 70 75 80

Leu Asn Leu Ile Leu Leu Gly Lys Glu Val Phe Gln Met Ala His Gly
85 90 95

Leu Arg Gly Tyr Ala Lys Tyr Trp Glu Asn Trp Leu Gln Trp Thr Ile
100 105 110

Gly Thr Gly Val Leu Leu Cys Val Thr Pro Glu Thr Val Arg Thr Asp
115 120 125

Asp Leu Thr Ala Val Pro Val Trp Gln His His Val Ala Ala Ile Val
130 135 140

Ile Leu Leu Val Trp Leu Glu Leu Met Met Leu Val Gly Arg Phe Pro
145 150 155 160

Ile Phe Gly Val Tyr Val Gln Met Phe Thr Lys Val Ala Val Asn Phe
165 170 175

Ala Lys Phe Leu Leu Ala Tyr Ile Cys Leu Leu Val Ala Phe Gly Leu
180 185 190

Ser Phe Ala Val Leu Phe Asn Asp Tyr Pro Ala Phe Glu Asn Ile Thr

195 200 205

Trp Ser Phe Leu Lys Ser Ile Thr Met Met Ser Gly Glu Leu Glu Phe
210 215 220

Glu Asp Ile Phe Tyr Gly Asp Tyr Ala Val Lys Phe Pro Val Thr Ala
225 230 235 240

His Ile Ile Phe Leu Ser Phe Val Leu Leu Val Thr Val Ile Leu Thr
245 250 255

Asn Leu Met Val Gly Leu Ala Val Ser Asp Ile Gln Gly Leu Gln Val
260 265 270

Ser Ala Thr Leu Asp Arg Leu Val Arg Gln Ala Glu Leu Val Ser Arg
275 280 285

Leu Glu Ser Leu Phe Phe Ser Arg Leu Leu Arg Ser Ala Pro Thr Asn
290 295 300

Leu Ile Gln Leu Cys Lys Arg Ser Ala Leu
305 310

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<212> DNA
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